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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,409	08/28/2001	Toyoaki Sugaya	4767 (47539.15)	6134

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EXAMINER

TRAN, LY T

ART UNIT PAPER NUMBER

2853

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/941,409	Applicant(s) SUGAYA ET AL.	
	Examiner Ly T TRAN	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 and 8-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6 and 8-39 is/are rejected.
- 7) ☒ Claim(s) 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of characteristic 1D, 2A, 3A and 4A in Paper No. 7 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 31- 33, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of in view of Ahta et al (USPN 4,597,794) Iwao (USPN 6,390,617) and .

With respect to claims 31-33, 36 and 38, Takekoshi discloses an ink jet apparatus and a method comprising:

- A recording head for an ink to jet the pigment ink onto a recording medium (Abstract, Column 4: line 50-55) having an ink receiving layer containing thermoplastic resin particle on a surface and a ink solvent absorbing layer adjoining to an inner side of the ink receiving layer (Column 3: line 5-21).

- A heating and pressing device to heat and press the recording medium so as to make the ink receiving layer of the recording medium to be transparent (Column 3: line 22-32)
- A conveyor to convey the recording medium to the recording head and further to the heating and pressing device (Column 3: line 64-67).
- A temperature controller to control a heating temperature by the heating and pressing device within a range of $T_0 \pm \Delta T$, where T_0 is 50°C to 150°C and ΔT is not larger than 10°C (Column 9: line 24-25, Column 10: line 28, in line 28 disclose the temperature in the unit 7 is set at 150°C , so T_0 could be 150°C and could be ΔT 0°C such as $150^{\circ}\text{C} \pm 0^{\circ}\text{C} = 150^{\circ}\text{C}$)
- Heating and pressing device has a recording medium contacting surface to contact the recording medium and comprises a cleaning member to clean the recording medium contact surface (Fig.2: element 77)

With respect to claims 2 and 32, Takekoshi discloses and an apparatus and a method wherein T_0 is $80\text{-}130^{\circ}\text{C}$ (Column 9: line 24-25).

With respect to claim 4, Takekoshi discloses the ink jet recording apparatus is adapted to record an image on one of plural kinds of recording medium (Column 3: line 5-7) and the temperature controller changes the heating temperature in according with the kind of the recording medium (Column 9: line 27-28).

Takekoshi fails to teach a pigment ink, a pressing force of 9.8×10^4 to 4.9×10^6 Pa, pigment ink solvent absorbing layer which absorbs a pigment ink solvent, inorganic particle.

Ahta teaches a pigment ink (Column 2: line 40-44).

Iwao teaches a pressing force is 4.4 kg which is 4.3×10^5 Pa (Column 11: line 10).

Ichinose et al teaches pigment ink solvent absorbing layer which absorbs a pigment ink solvent and inorganic particle (Column 10: line 1-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made with using pigment ink as taught by Ahta for the purpose of obtaining an extremely excellent in water resistance and light fastness image.

It would have been obvious to one having ordinary skill in the art at the time the invention was made with the pressing force of 4.3×10^5 Pa as taught by Iwao for the purpose of making the ink stick on the medium more properly therefore obtain the high quality image.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have pigment ink solvent absorbing layer which absorbs a pigment ink solvent as taught by Ichinose et al. The motivation of doing so is to have a great ink absorbing capacity.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 4,597,794), Iwao (USPN 6,390,617) and Ichinose et al (USPN 6,550,909) as applied to claim 33 above, further in view of Endo et al. (EP 0564,420).

The combination of Takekoshi, Ahta, Ichinose and Iwao fails to teach controlling the heat and pressing device so as to change a heating and pressing time period in accordance with the kind of the recording medium.

Endo et al. teaches controlling the heat and pressing device so as to change a heating and pressing time period in accordance with the kind of the recording medium (fig.13; element S4-S7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify to controlling the heat and pressing device so as to change a heating and pressing time period in accordance with the kind of the recording medium as taught by Endo et al for the purpose of preventing various drawbacks resulting from uneven temperature distribution on the fixing roller.

4. Claims 17-19 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 5,597,794), Ichinose (USPN 6,550,909) and Iwao (USPN 6,390,617) as applied to claim 33 above, further in view of Kaburagi et al (USPN 5,502,475).

The combination of Takekoshi, Iwao, Ichinose and Ahta fails to teach when the recording does not conduct recording during a predetermined time period, the temperature controller stop controlling the heating temperature such that the heating and pressing device stop heat generation, controlling the heating temperature after the temperature controller stopped the controlling, the heating and pressing device conduct heating and pressing by prolong relatively a heating and pressing time period after the

heating temperature becomes higher than a lowest heating temperature and until the heating temperature becomes within a predetermined temperature range, recording apparatus does not conduct recording during a predetermined time period, the temperature controller controls such that the heating and pressing device keep the temperature within a second temperature lower than the range and recording does not conduct recording during a predetermined time period, the temperature controller controls such that the heating and pressing device keeps the heating temperature within a second temperature lower than the range and further when the recording does not conduct recording during a predetermined another time of period, the temperature controller stop the heating temperature such that the heating and pressing device stop heat generation and changing the feeding speed.

Kaburagi et al. teaches when the recording does not conduct recording during a predetermined time period, the temperature controller stop controlling the heating temperature such that the heating and pressing device stop heat generation, controlling the heating temperature after the temperature controller stopped the controlling, the heating and pressing device conduct heating and pressing by prolong relatively a heating and pressing time period after the heating temperature becomes higher than a lowest heating temperature and until the heating temperature becomes within a predetermined temperature range, recording apparatus does not conduct recording during a predetermined time period, the temperature controller controls such that the heating and pressing device keep the temperature within a second temperature lower than the range and recording does not conduct recording during a predetermined time

period, the temperature controller controls such that the heating and pressing device keeps the heating temperature within a second temperature lower than the range and further when the recording does not conduct recording during a predetermined another time of period, the temperature controller stop the heating temperature such that the heating and pressing device stop heat generation (Column 8: line 9-22, line 45-64, Column 9; line 1-3, 28-64) and changing the feeding speed (Column 12: line 15-16)

It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify with controlling the temperature as taught by Kaburagi et al for the purpose of improving the fixative-ness on the ink onto the sheet.

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 4,597,794), Iwao (USPN 6,390,617), Ichinose (USPN 6,550,909) and Kaburagi et al (USPN 5,502,475) as applied to claims 33 and 19 above, further in view of Silverbrook (USPN 5,815,173)

The combination of Takekoshi, Iwao, Ahta and Kaburagi discloses the claimed invention except that using a scanning head instead of full line head. Silverbrook shows that the scanning head and full line head is an equivalent structure known in the art (Column 25: line 37-40). Therefore, because these two scanning head and full line head were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the full line head for the scanning head.

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 4,597,794), Iwao (USPN 6,390,617) Ichinose (USPN 6,550,909) and Kaburagi et al (USPN 5,502,475) as applied to claim 33 and 19 above, further in view of Nakano et al. (USPN 6,012,794).

The combination of Takekoshi, Ahta, Iwao, Ichinose and Kaburagi fails to teach the recording head prolongs the recording time period by adjusting a stop time at which a scanning direction is changed.

Nakano et al. teaches the recording head prolongs the recording time period by adjusting a stop time at which a scanning direction is changed (Abstract, Column 13: line 25-35).

It would have been obvious to one having ordinary skill in the art at the time the combined invention was made as modify with the recording head prolongs the recording time period by adjusting a stop time at which a scanning direction is changed as taught by Nakano et al for the purpose of obtaining a high precision regardless of trembles of ink surface (Nokano USPN 6,012,794, Column 1: line 35-36).

7. Claims 5, 33-35 and 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo et al. (JP 05-112000) in view of Takekoshi (USPN 6,120,199), Iwao (USPN 6,390,617) and Ichinose (USPN 6,550,909).

Okubo discloses an ink jet apparatus comprising:

- A recording head for jetting ink onto a recording medium (Abstract)

- A heating and pressing device to heat and press the recording medium so as to make the ink receiving layer of the recording medium to be transparent (Fig.3: element 5, 12)
- A conveyor to convey the recording medium to the recording head and further to the heating and pressing device (Fig.3: element 2).
- The heating and pressing device comprises a belt member stretched around at least two rollers and a roller coming in contact with the belt member so as to form a nip section there-between where the recording medium passes through (Fig.3: element 5, 12)
- The heating and pressing two belt members stretched around at least two rollers and the two belt member come in contact with the belt member so as to form a nip section there-between where the recording medium passes through (Fig.3: element 5, 12)

However, Okubo fails to teach temperature controller to control a heating temperature by the heating and pressing device within a range of $T_0 \pm \Delta T$, where T_0 is 50°C to 150°C and ΔT is not larger than 10°C , ink is pigment, the medium having an ink receiving layer containing thermoplastic resin particle on a surface and a ink solvent absorbing layer adjoining to an inner side of the ink receiving layer and a pressing force of 9.8×10^4 to 4.9×10^6 Pa, pigment ink solvent absorbing layer which absorbs a pigment ink solvent, inorganic particle

Takekoshi teaches the recording head for an ink to jet the ink onto a recording medium (Abstract) having an ink receiving layer containing thermoplastic resin particle

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on a surface and a ink solvent absorbing layer adjoining to an inner side of the ink receiving layer (Column 3: line 5-21), temperature controller to control a heating temperature by the heating and pressing device within a range of $T_0 \pm \Delta T$, where T_0 is 50°C to 150°C and ΔT is not larger than 10°C (Column 9: line 24-25, Column 10: (Column 9: line 24-25, Column 10: line 28, in line 28 disclose the temperature in the unit 7 is set at 150°C , so T_0 could be 150°C and could be ΔT 0°C such as $150^{\circ}\text{C} \pm 0^{\circ}\text{C} = 150^{\circ}\text{C}$ line 40-42).

Ichinose et al teaches pigment ink solvent absorbing layer which absorbs a pigment ink solvent and inorganic particle (Column 10: line 1-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have pigment ink solvent absorbing layer which absorbs a pigment ink solvent as taught by Ichinose et al. The motivation of doing so is to have a great ink absorbing capacity.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Okubo et al to have ink receiving layer containing thermoplastic resin particle on a surface and a pigment ink solvent absorbing layer adjoining to an inner side of the ink receiving layer as taught by Takekoshi for the purpose of providing the degradation of printing quality.

Ihta et al teaches a pigment ink (Column 2: line 40-44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the pigment ink as taught by Ahta for the purpose of obtaining an extremely excellent in water resistance and light fastness image.

Iwao teaches a pressing force is 4.4 kg which is 4.3×10^5 Pa (Column 11: line 10)

It would have been obvious to one having ordinary skill in the art at the time the invention was made with the pressing force of 4.3×10^5 Pa as taught by Iwao for the purpose of making the ink stick on the medium more properly therefore obtain the high quality image.

Allowable Subject Matter

8. Claim 40 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 40 is allowable over prior art of record because at least prior art have not been found to anticipate or teach the heating and pressing device has at last a roller of which surface has a modulus of longitudinal elasticity between 1×10^6 Pa and 1×10^7 Pa.

Response to Arguments

9. Applicant's arguments with respect to claims 31-33 and 36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ly T TRAN whose telephone number is 571-272-2155. The examiner can normally be reached on M-F (7:30am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



March 29, 2004



Stephen D. Meier
Primary Examiner